This Page Is Inserted by IFW Operations
and is not a part of the Official Record

BEST AVAILABLE IMAGES

Defective images within this document are accurate representations of the original documents submitted by the applicant.

Defects in the images may include (but are not limited to):

- BLACK BORDERS
- TEXT CUT OFF AT TOP, BOTTOM OR SIDES
- FADED TEXT
- ILLEGIBLE TEXT
- SKEWED/SLANTED IMAGES
- COLORED PHOTOS
- BLACK OR VERY BLACK AND WHITE DARK PHOTOS
- GRAY SCALE DOCUMENTS

IMAGES ARE BEST AVAILABLE COPY.

As rescanning documents *will not* correct images, please do not report the images to the Image Problem Mailbox.

* NOTICES *
Japan Patent Office is not responsible for any damages caused by the use of this translation.
1.This document has been translated by computer. So the translation may not reflect the original precisely.
2.**** shows the word which can not be translated.
3.In the drawings, any words are not translated.

Bibliography

---

(19) [Country of Issue] Japan Patent Office (JP)
(12) [Official Gazette Type] Open patent official report (A)
(11) [Publication No.] JP,7-185120,A
(43) [Date of Publication] July 25, Heisei 7 (1995)
(54) [Title of the Invention] Coin expenditure equipment
(51) [International Patent Classification (6th Edition)]
A63F 7/02 352 J
[Request for Examination] Un-asking.
[The number of claims] 1
[Mode of Application] OL
[Number of Pages] 9
(21) [Filing Number] Japanese Patent Application No. 5-333492
(22) [Filing Date] December 27, Heisei 5 (1993)
(71) [Applicant]
[Identification Number] 591006508
[Name] MEISEI, Inc.
[Address] 1411, Matsukawado-cho, Kasugai-shi, Aichi-ken
(72) [Inventor(s)]
[Name] Maeda ****
[Address] 1374, Matsukawado-cho, Kasugai-shi, Aichi-ken Inside of Nagoya elaborate incorporated company
(74) [Attorney]
[Patent Attorney]
[Name] Adachi **

[Translation done.]

* NOTICES *

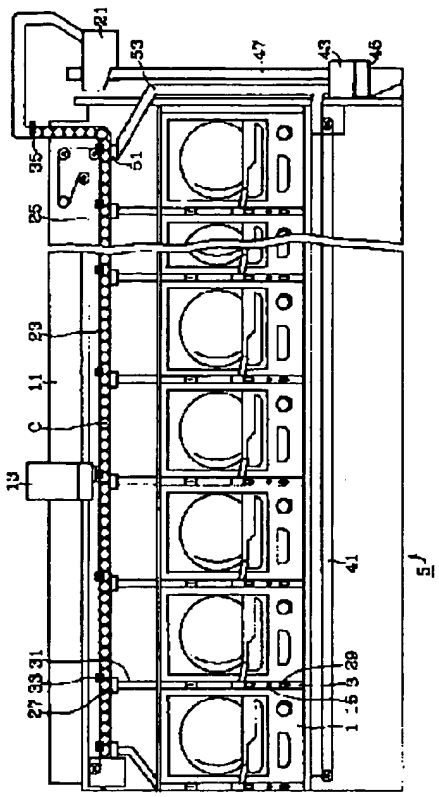
Japan Patent Office is not responsible for any damages caused by the use of this translation.
1.This document has been translated by computer. So the translation may not reflect the original precisely.
2.**** shows the word which can not be translated.
3.In the drawings, any words are not translated.

Summary

---

(57) [Abstract]
[Objects of the Invention] Be compact, make into the minimum the coin prepared for expenditure, and offer the coin expenditure equipment which can also make recovery of the coin easy.
[Elements of the Invention] The money-changing machine prepared in the game island 5 conveys in order the 500 yen coin sent out from the sending-out hopper 21 to a lower stream of a river with the conveyance belt 25, arranges it in a single tier, and is contained on the conveyance rail 23. Corresponding to the coin expenditure mouth 29, the expenditure shutter 27 and the coin expenditure path 31 are arranged in every place of the conveyance rail 23. If it calls, and a switch 15 is pushed, the bill injection machine 13 is called and the tag of 1000 yen is fed into the bill injection machine 13, the expenditure shutter 27 according to the injection position will be opened, and a coin will fall. counting -- detection of that two coins fell by the sensor 33 closes the expenditure shutter 27 The coin dropped from the expenditure shutter 27 is directly paid out to the predetermined coin expenditure mouth 29 through the coin discharge path 31.

[Translation done.]



[Translation done.]

* NOTICES *

Japan Patent Office is not responsible for any damages caused by the use of this translation.

1.This document has been translated by computer. So the translation may not reflect the original precisely.

2.**** shows the word which can not be translated.

3.In the drawings, any words are not translated.

CLAIMS

[Claim(s)]

[Claim 1] Coin expenditure equipment which pays out coin, such as a coin and a medal for games, to the coin expenditure mouth which is characterized by providing the following, and which it has [machine / medal loan / the money-changing machine prepared in the game island, a game machine,] A coin conveyance means to convey coin from a coin tank to the upper part of each aforementioned expenditure mouth A distribution means for it to be prepared in every place of this

coin conveyance means, and to arrange the conveyed coin on each aforementioned expenditure mouth by direct counting which carries out counting of the number of the coin distributed by each distribution means, respectively -- a means the coin of number of sheets according to the contents of directions of an expenditure directions means to direct expenditure of the coin to each aforementioned expenditure mouth, and this expenditure directions means -- the above -- counting -- the distribution control means which operate the aforementioned distribution means until counting is carried out by the means

---

[Translation done.]

* NOTICES *

Japan Patent Office is not responsible for any damages caused by the use of this translation.

1.This document has been translated by computer. So the translation may not reflect the original precisely.
2.**** shows the word which can not be translated.
3.In the drawings, any words are not translated.

DETAILED DESCRIPTION

[Detailed Description of the Invention]
[0001]
[Industrial Application] this invention relates to the coin expenditure equipment which pays out a coin to the expenditure mouth of a money-changing machine, or pays out a medal to expenditure mouths, such as a slot machine and a medal loan machine.
[0002]
[Description of the Prior Art] The medal collection-and-delivery equipment in an amusement center is indicated by the former, for example, JP,4-448,Y. This medal collection-and-delivery equipment arranges a medal tank at the end of a game island, conveys a medal from the medal tank to the upper part of a game island, and it is constituted so that a medal may be supplied to each of a slot machine or a medal loan machine.
[0003] with this medal collection-and-delivery equipment, the medal for expenditure was stocked by the medal hopper with which each of the medal passage which is alike, respectively, and is gone and prolonged and each opportunity of a slot machine or a medal loan machine is equipped, the eccrisis mechanism of each slot machine or a medal loan machine which each builds in, respectively was operated, and the

medal of required number of sheets was paid out
[0004]
[Problem(s) to be Solved by the Invention] However, according to the conventional technology, there was a problem which is listed to below. First, since it had composition which stocks the medal for expenditure in each of each slot machine or a medal loan machine, all had to be doubled, or it had to become and a lot of medals had to be prepared as a stocked part.
[0005] Moreover, it takes [recovery] a help and time and was troublesome in order to have to collect medals from each of each opportunity to all collect the medals stocked by each slot machine and the medal loan machine. It was a very big problem that the recovery which applies the above-mentioned medal collection-and-delivery equipment, and needs the coin to prepare in large quantities especially in order to have to prepare the coin for exchange before opening of an amusement center and to have to collect them after closing, when it considers as the equipment which supplies the coin for exchange to a money-changing machine takes time and effort.
[0006] Furthermore, the medal hopper and the eccrisis mechanism had to be prepared in each, and the suitable space was required for the interior of each opportunity. For this reason, a compacter thing was desired, in order for the medal loan machine etc. to have become large-sized as a whole and to have installed in the narrow space between game machines.
[0007] Then, this invention is compact, can make the minimum the coin prepared for expenditure, and also aims recovery of the coin at offering the coin expenditure equipment which can be done easily.
[0008]
[Means for Solving the Problem] this invention made in order to attain the above-mentioned purpose To the coin expenditure mouth which it has [machine / medal loan / the money-changing machine prepared in the game island, a game machine,] A coin conveyance means to be coin expenditure equipment which pays out coin, such as a coin and a medal for games, and to convey coin from a coin tank to the upper part of each aforementioned expenditure mouth, A distribution means for it to be prepared in every place of this coin conveyance means, and to arrange the conveyed coin on each aforementioned expenditure mouth by direct, counting which carries out counting of the number of the coin distributed by each distribution means, respectively -- with a means the coin of number of sheets according to the content of directions of an expenditure directions means to direct expenditure of the coin to each aforementioned expenditure mouth, and this expenditure directions means -- the above -- counting -- it is characterized by having the distribution control means which operate the aforementioned distribution means until counting is carried out by the means
[0009]
[Function] the coin of number of sheets corresponding to the content of directions when expenditure of the coin to each expenditure mouth was directed according to

the coin expenditure equipment of this invention -- counting -- a distribution means operates until counting is carried out by the means, and coin is directly paid out of a coin conveyance means by each expenditure mouth

[0010] Here, when for example, this equipment is constituted as medal expenditure equipment for games, expenditure directions of a medal are taken out from each game machine or each medal loan machine side according to winning a prize with a game machine, an injection of the coin to a medal loan machine, etc. Moreover, when this equipment is constituted as coin expenditure equipment, expenditure directions of a coin are taken out from each money-changing machine or each medal loan machine according to the case where an injection of the bill and coin to a money-changing machine, a medal loan machine, etc. pay out change etc.

[0011]

[Example] Next, the example of this invention is explained based on a drawing. The coin distribution equipment as an example is constituted as a money-changing machine prepared in the game island 5 where two or more pachinko machines 1 and ball rental machines 3 were arranged by turns, as shown in drawing 1 .

[0012] The bill injection machine 13 moves this money-changing machine to the position where it called for calling the bill injection machine 13 and the bill injection machine 13 of the portable type attached in the orbit 11 prepared in the upper part of the game island 5 to every place of the game island 5, the switch 15 was had and called, and the switch 15 was pushed, and the bill which should be exchanged is received.

[0013] Moreover, the sending-out hopper 21 formed in the end upper part of the game island 5 in order to store the coin for exchange, The coin sent out from the sending-out hopper 21 is arranged in a single tier. The conveyance rail 23 which can be contained, The conveyance belt 25 which conveys the coin of the conveyance rail 23 to a lower stream of a river one by one, and the expenditure shutter 27 for paying out the conveyed coin to game island every place, The coin expenditure path 31 which leads the coin paid out of the expenditure shutter 27 to the coin expenditure mouth 29 in which it was prepared by the lower part of a ball rental machine 3, counting which carries out counting of the coin which passes each expenditure shutter 27 -- by having a sensor 33 and the coin existence sensor 35 which detects the existence of the coin in a rail in the upper section of the conveyance rail 23, and carrying out switching action of the expenditure shutter 27 The coin of the conveyance rail 23 is paid out to the predetermined coin expenditure mouth 29. In addition, the coin expenditure mouth 29 serves also as the exhaust port when a poor coin is fed into a ball rental machine 3.

[0014] Furthermore, the recovery conveyer 41 arranged inside the game island 5 in order to collect the coins fed into each ball rental machine 3, The reservoir tank 43 arranged by the end lower part of the game island 5 in order to store the collected coin, It uses having the sending-out machine 45 which sends out the coin of the reservoir tank 43 little by little, and the lifter 47 which lifts the sent-out coin to the

above-mentioned sending-out hopper 21, and circulating the coin fed into the ball rental machine 3 as a coin for exchange.
[0015] Furthermore, it also has the recovery shutter 51 for collecting the coins of the conveyance rail 23 on the reservoir tank 43, and the coin recovery path 53 again. In addition, the money-changing machine of this example can throw in the tag of 1000 yen, and can exchange it for two 500 yen coins.
[0016] Next, it explains in more detail [about a characteristic portion] among each [these] composition. As shown in drawing 2 , the bill injection machine 13 is connected with the chain 62 stretched by the sprocket 61 of orbital 11 ends, and moves to right and left in accordance with an orbit 11 by making a chain 62 drive. The interior of an orbit 11 is made to correspond to the halt position of the bill injection machine 13, the position detection sensor 63 is arranged in it, and the move position detection plates 64a-64c are being fixed to the tooth-back side of the bill injection machine 13. These move position detection plates 64a-64c are formed at a time in one place and its right and left in the center of a tooth-back side of the bill injection machine 13 at one place [three], respectively, and each passes through between the light-emitting part of the position detection sensor 63, and light sensing portions, when the bill injection machine 13 moves. Control moved and stopped is performed in the position where the position on the orbit 7 of the bill injection machine 13 was detected, it called by this, and the switch 15 was pushed.
[0017] Moreover, the slot for bills 65 for this bill injection machine 13 throwing in the bill to exchange, The bill identification unit 66 which carries out truth-or-falsehood distinction of the bill inserted from the slot for bills 65, face-value judgment, eccrisis of an imitation bill, sending of a regular bill, etc., The bill receipt box 67 which can be detached and attached freely, and the piece-of-paper transport device 68 which conveys a regular bill from the bill identification unit 66 to the bill receipt box 67, It has the drop 69 which displays the frame of the thrown-in bill, the message to a user, etc., and the bill concerned is received only when a predetermined bill (an example 1000 yen bill) is thrown in.
[0018] The sending-out hopper 21 is equipped with the feed disk 72 rotated by the motor which it is attached free [rotation on the inclined frame 71] as shown in drawing 3 (a) and (b), and is not illustrated, the pin 73 which protruded in the pitch suitable near [periphery] the feed disk 72, and the housing 74 which is prepared so that the feed disk 72 may be surrounded, and is put into a coin inside. Step 72a by which the periphery neighborhood of the feed disk 72 was made lower than a center section by the thickness of one coin is formed, and the pin 73 is arranged at this step 72a. If the rotation drive of the feed disk 72 is carried out in the direction of an illustration arrow, a coin is hooked on a pin 73, it will show around at the inside of housing 74, and step 72a, one sheet will be conveyed at a time, and it will extrude along with a guide 75 to the conveyance rail 23.
[0019] As the coin which it arranged one conveyance rail 23 in inside at a time, it had contained inside the coin C sent out from the sending-out hopper 21 as shown

in drawing 1 , and was contained here is shown in drawing 4 and drawing 5 , the upper-limit portion is in contact with the conveyance belt 25. As an arrow shows to drawing 4 , a circulation drive is carried out, and this conveyance belt 25 is conveyed toward the direction of down-stream (left of drawing 4), rolling Coin C on the conveyance rail 23. Moreover, the coin existence sensor 35 is arranged at the upper section of the conveyance rail 23 as shown in drawing 1 . This coin existence sensor 35 is the photosensor turned on [photosensor], when between the floodlighting section and light sensing portions is interrupted in Coins C, and when this sensor is turned on, it is judged in the conveyance rail 23 that Coin C has filled. The above-mentioned sending-out hopper 21 will be operated if this coin existence sensor 35 is turned off [it], and it sends out a coin to the conveyance rail 23.

[0020] The expenditure shutter 27 and the coin expenditure path 31 for discharging a coin are established in every place of this conveyance rail 23. The expenditure shutter 27 is equipped with the chute combination shutter 81 which closes coin exhaust port 23a formed in the conveyance rail 23 by upper-limit section 81a, the guide frame 82 which surrounded the chute combination shutter 81 and was prepared, and the solenoid 84 which rotates the above-mentioned chute combination shutter 81 and a guide frame 82 centering on the supporting point 83 as it is shown in drawing 4 and drawing 5 . If the chute combination shutter 81 rotates, Coin C falls from coin exhaust port 23a of the conveyance rail 23 and energization is stopped as it is shown in drawing 6 , when it energizes to a solenoid 84, with a spring 85, the chute combination shutter 81 will be returned to the rotation position of drawing 5 , and will close coin exhaust port 23a.

[0021] the number of sheets of the coin C which falls from coin exhaust port 23a by this switching action -- counting of coin exhaust port 23a which is up a little — it is counted by the sensor 33 counting -- a sensor 33 is a reflected type photosensor, and when it is turned on in response to the reflected light from Coin C when Coin C is on the conveyance rail 23 (refer to drawing 5), and there is no coin C on the conveyance rail 23 (refer to drawing 6), since there is no reflection in Coin C, it is that it is turned off Therefore, by taking a count to the timing which was turned off shows expenditure number of sheets.

[0022] The coin C dropped from coin exhaust port 23a is led to the chute combination shutter 81, and goes into the coin expenditure path 31. The coin expenditure path 31 is arranged so that the coin C which up 31a was made the wide mouth and thought to be easy to receive Coin C may be led to the coin expenditure mouth 29 in the lower part of each ball rental machine 3 shown in drawing 1 . Moreover, in the middle of this coin expenditure path 31, the expenditure check sensor 91 is arranged as shown in drawing 4 - drawing 6 . The expenditure check sensor 91 is the photosensor arranged so that the falling coin C may pass through between the floodlighting section and light sensing portions, and in order that Coin C may check whether as planned has carried out number-of-sheets passage, it is formed.

[0023] In addition, the conveyance place of a coin is constituted for the recovery shutter 51 and the coin recovery path 53 as well as [almost] the expenditure shutter 27 and the coin expenditure path 31 except for the reservoir tank 43 and the bird clapper. In the above composition, the recovery conveyer 41 shown in drawing 1 carries out a continuation operation by powering on, and is collecting the coins fed into the ball rental machine 3 to the reservoir tank 43. Moreover, it will operate, if the coin of a lifter 47 in the sending-out hopper 21 becomes less than predetermined, and a certain amount of quantity of the coin is always made to be stored in the sending-out hopper 21. Furthermore, the bill injection machine 13, the conveyance belt 25, each expenditure shutter 27, and the recovery shutter 51 have operation controlled by the electronic control 101 explained below.

[0024] The drive circuit 105 for bill injection machine movement which drives the motor for moving the bill injection machine 13 in accordance with an orbit 11 etc., the drive circuit 107 for conveyance belts which carries out drive control of the conveyance belt 25, the drive circuit 109 for expenditure shutters which carries out switching action of the expenditure shutter 27, and the drive circuit 111 for recovery shutters which carry out the switching action of the recovery shutter 51 are connected, and a driving signal outputs to each circuit as shown in an electronic control 101 at drawing 7 . Moreover, the receipt of a regular bill, the input of the signal which shows malfunction generating, the output of the signal which shows the completion of expenditure of a coin, etc. output [the bill injection machine 13 is connected and] and input a signal mutually. furthermore, the bill sensor 121 which detects bill receipt completion with the bill injection machine 13, each position detection sensor 63 which detects the move position of the bill injection machine 13, the coin existence sensor 35 which detect the shortage of a receipt coin of the conveyance rail 23, and expenditure number of sheets count -- each -- counting -- the expenditure check sensor 91 grade which checks whether expenditure has been performed normally is connected with a sensor 33, and the detecting signal of these sensors is inputted, respectively In addition, this electronic control 101 is the logic operation circuit constituted focusing on CPU, well-known ROM, well-known RAM, etc.

[0025] Next, operation of the money-changing machine controlled by this electronic control 101 is explained. It is made for the coin to always have come in the conveyance rail 23 by coin restoration processing which shows this money-changing machine in drawing 8 .

[0026] First, an electronic control 101 checks for a coin at the conveyance rail 23 based on the detecting signal of the coin existence sensor 35, as shown in drawing 8 (S10). Since a coin is not filled at the time of starting of a money-changing machine but the coin existence sensor 35 becomes off (S10:NO), an electronic control 101 operates the sending-out hopper 21 (S20), and also operates the conveyance belt 25 (S30). Consequently, one coin is sent out at a time to the conveyance rail 23, and a coin is tightly put in order by the conveyance rail 23. Next, based on the detecting

signal of the coin existence sensor 35, it checks for a coin again at the conveyance rail 23 (S40). If a coin is sent out one by one and got blocked to the position of the coin existence sensor 35, since the coin existence sensor 35 will be turned on (S40:YES), the sending-out hopper 21 is stopped (S50), and the conveyance belt 25 is also stopped (S60). Consequently, in the conveyance rail 23, the coin sent out by the time the sending-out hopper 21 stopped is got blocked. It returns to S10 henceforth, and whenever it decreases beyond the grade out of which the coin in the conveyance rail 23 is paid, processing after S20 is performed.

[0027] Whenever it calls and a switch 15 is pushed apart from the above processing, exchange processing of drawing 9 is performed. In exchange processing, as shown in drawing 9 , bill injection machine move processing for which the bill injection machine 13 is moved to the position where it called and the switch 15 was pushed first is performed (S100). The content of this move processing of S100 becomes the processing shown in drawing 10 in detail.

[0028] First, in order to already stop the bill injection machine 13 in one of halt positions, it investigates whether check processing of a halt position is under execution (S110), and judges about the ability of the bill injection machine 13 to perform acceptance of a bill (S120). It stands by until the processing concerned will be completed, if it is [check / of a halt position] under processing (S110:YES), and it stands by until it will be in the state where bill acceptance can be performed, according to causes, like external covering of the bill injection machine 13 is open, if it is in the state which cannot perform acceptance of a bill (S120:NO).

[0029] Check processing is completed by S110,120, and when it is judged that it is in a bill acceptance state, (S110:NO, S120:YES), and distinction of the present halt position which calls, distinguishes a position (S130) and has subsequently been stopped now with which it called and the switch 15 was pushed are performed (S140). And based on these distinction results, the move direction of the bill injection machine 13 is determined, and the travel is computed (S150).

[0030] Next, the driving signal according to the above-mentioned move direction and distance is outputted to the drive circuit 105 for bill injection machine movement, the bill injection machine 13 is moved (S160), it calls whether the bill injection machine 13 called and it arrived at the position, and it is judged from the detecting signal of the position detection sensor 63 corresponding to a position (S170). although only the distance computed by S150 moved the bill injection machine 13 from the position detection sensor 63 here when there was no detecting signal -- the -- since it calls and has not arrived at a position, that is displayed on a drop 69 as the position detection sensor 63 concerned being unusual (S180), and this routine is once ended

[0031] if the pushed position detection sensor 63 corresponding to [call and] a switch 15 to a detecting signal is inputted, ****** the bill injection machine 13 will call and it will arrive at a position on the other hand -- being concerned -- it calls, while resetting a switch 15, the output of the above-mentioned driving signal is

suspended (S190), the bill injection machine 13 is called, and a position is stopped Here, when the bill injection machine 13 moves to the right and right move position detection plate 64c interrupts between the light-emitting part of the position detection sensor 63, and light sensing portions in drawing 2 , the driving signal to the drive circuit 105 is stopped, and further, when central move position detection plate 64b interrupts between the light-emitting part of the position detection sensor 63, and light sensing portions, the brake with which the motor for a drive is equipped is operated. Thus, by stopping the bill injection machine 13, the shock which is stabilized, and can make a halt position a fixed position, and joins the bill injection machine 13 at the time of a halt can also be eased.

[0032] in addition, when call, a switch 15 is pushed, a certain others which are on the moving trucking to a target position while the bill injection machine 13 moves call towards the position and a switch 15 is pushed If the bill injection machine 13 has not passed through the position, after calling, making the position corresponding to a switch 15 pushed later first suspend the bill injection machine 13 and carrying out exchange operation, it is constituted so that it may be made to move to the position where it called previously anew and the switch 15 was pushed.

[0033] Now, after finishing move processing [in / drawing 9 / as mentioned above] of S100, bill injection processing in which the bill fed into the bill injection machine 13 next is received is performed (S200). This bill injection processing of S200 turns into processing shown in drawing 11 in detail. first, truth-or-falsehood distinction of the bill which outputted the driving signal to the drive circuit 103 for the bill receipt sections, and was inserted in the bill injection machine 13 when it stood by in order to receive a bill (S210), and the bill was thrown in (S210:YES), face-value judgment, eccrisis of an imitation bill, sending of a regular bill, and conveyance of a regular bill -- and it raises and - receipt etc. is performed (S220) In addition, these processings are the same as acceptance processing of the bill in a well-known money-changing machine, in the example, distinguish only the tag of 1000 yen and are accepted.

[0034] In this way, after finishing the bill injection processing of S200 in drawing 9 next, coin expenditure processing which pays out the coin of number of sheets according to the face value of the received bill is performed (S300). This coin expenditure processing of S300 comes to be shown in drawing 12 in detail. First, a driving signal is outputted to the drive circuit 107 for conveyance belts, and the conveyance belt 25 is operated (S310). And the expenditure shutter 27 according to the position where the driving signal was outputted and called to the drive circuit 109 for expenditure shutters, and the switch 15 was pushed is opened (S320). Consequently, the coin which suited right above the expenditure shutter 27 falls, and the next coin is sent to the position in order with the conveyance belt 25. The next coin here is a coin on the right in drawing 4 . In the example, since the coin on the left is energized leftward with the conveyance belt 25, rightward, it does not roll. That is, in an example, while the conveyance belt 25 is a means to convey a coin to a downstream, it is acting also as a reversion prevention means to energize so that

a coin may not return.

[0035] next, predetermined number-of-sheets expenditure of the coin is carried out -- counting -- it counts by the sensor 33 (S330) since only two coins of 500 yen are paid out in the example -- the 1st coin -- falling -- counting -- a sensor 33 becomes off and the following coin conveys -- having -- counting -- a sensor 33 -- ON -- becoming -- further -- the coin -- falling -- counting -- when a sensor 33 is turned off, it can judge with two coins having paid out in addition, expenditure number of sheets counts also by the expenditure check sensor 91 simultaneously at this time -- having -- counting -- the case where it differs from the number of counts of a sensor 33 -- a coin -- on the way -- it comes out, and since it may have been caught, an error code to that effect is displayed on a drop 69, and acceptance of a bill is stopped

[0036] In this way, if the coin of predetermined number of sheets is paid out, the driving signal to the drive circuit 109 for expenditure shutters will be stopped, and the open expenditure shutter 27 will be shut (S340). And the conveyance belt 25 is also stopped (S350). Exchange in the position where it called and the switch 15 was pushed by the above processing finishes.

[0037] Now, below, recovery of the coin for exchange contained by the conveyance rail 23 is explained. Recovery of a coin is the control which will be performed if the recovery switch which is not illustrated is pushed, and is performed by the coin recovery processing shown in the flow chart of drawing 13 . First, if this processing is started, a driving signal will be outputted to the drive circuit 111 for recovery shutters, and the recovery shutter 51 will be opened (S410). And the driving signal of an inversion is outputted to the drive circuit 107 for conveyance belts, and it is made to operate so that the conveyance belt 25 may be rotated reversely with usual (S420). Consequently, the coin contained by the conveyance rail 23 is conveyed in order to the recovery shutter 51, and is dropped to the reservoir tank 43 from here through the coin recovery path 53. And it waits for a predetermined time required for recovery to pass (S430), the driving signal to the drive circuit 107 for conveyance belts is stopped, and the conveyance belt 25 is stopped (S440). And the driving signal to the drive circuit 111 for recovery shutters is also stopped, and the recovery shutter 51 is closed (S450).

[0038] Since it was made to drop a coin from the conveyance rail 23 directly to the coin expenditure mouth 29 according to the money-changing machine of this example as explained above, it is not necessary to stock the coin for exchange in each corresponding to the coin expenditure mouth 29. Therefore, compared with the case where the coin for exchange is stocked, the whole amount of stocks becomes good at least at each.

[0039] moreover, since what is necessary is just to collect from one place of the conveyance rail 23, and to collect in recovery of a coin, compared with the case where the coin is stocked for every expenditure mouth, it is markedly alike, and recovery becomes easy Since it also had composition easily especially recoverable

to one reservoir tank 43 in the example, recovery of a coin takes neither a help nor time further.

[0040] Furthermore, since it is not necessary to prepare the hopper and discharge mechanism for expenditure coins in the narrow space of pachinko machine 1 comrades, even if narrow, a money-changing machine can be installed easily. Especially, in the example, since the coin expenditure mouth 29 is used also [exhaust port / poor coin / of a ball rental machine 3] while making the bill injection machine 13 into a portable type, the coin expenditure portions of a ball rental machine 3 and this money-changing machine have been settled between bases very compactly. Therefore, a game person can use a pachinko machine, without standing a seat at all.

[0041] Although the example of this invention was explained above, this invention is not limited to this but can adopt the mode within the limits which do not deviate from the summary of this invention which becomes various. For example, although it constituted from an example so that an error might be displayed and exchange might be stopped when expenditure of a coin was not able to be checked by the expenditure check sensor 91, the expenditure shutter 27 is re-operated over 1 time or abundance, and you may make it urge expenditure. However, it is better to carry out like an example, in order not to discharge many coins too much accidentally.

[0042] Moreover, although it constituted from an example so that the coin of predetermined number of sheets might pay out by closing the expenditure shutter 29 to suitable timing, if it constitutes so that the conveyance belt 25 may be operated to the grade by which only the coin of predetermined number of sheets is conveyed using a stepping motor, it is not necessary to control to close the expenditure shutter 27 to specific timing.

[0043] In addition, although it is made for the coin of a downstream to have not returned by driving the conveyance belt 25 in the example in the case of coin expenditure, as this reversion prevention means, the conveyance rail 23 is made to incline so that it may fall toward a downstream, and may only be arranged.

[0044] Moreover, although the sending-out hopper 21 was formed in the end upper part of a game island in the example in order to store the coin for exchange, this hopper is installed into the office of an amusement center, and you may make it send out a coin to each game island. Furthermore, although the example showed the conveyance rail 23 conveyed while standing a coin, arranging to a single tier and rolling, the conveyance method in the upper part of the game island 5 is not restricted to this at all. For example, the various methods of common knowledge, such as extruding on a rail, laying down a coin horizontally and sliding it, or putting on a belt conveyor and conveying in order, are employable.

[0045] Furthermore, although the example showed the money-changing machine which exchanges the tag of 500 yen of 1000 yen for two coins again, 5000 yen and 10000 yen acceptance may be enabled, or may be used as the money-changing machine exchanged for a coin. [of 100 yen] Moreover, even if it does not make a

bill injection machine into a portable type, you may be the bill injection machine of the common knowledge fixed between the pachinko machines 1. Moreover, although the coin expenditure mouth 29 was formed in the lower part of a ball rental machine 3, you may make it pay out the coin expenditure mouth 29 in the example to the saucer which could prepare in the pachinko machine 1 and was prepared in the game island 5 at exclusive use besides it.

[0046] Furthermore, in addition, you may constitute as expenditure equipment of the medal for games used with medal game machines, such as not only a money-changing machine like an example but a slot machine. In this case, the expenditure shutter which pays out a medal to a slot machine, and the expenditure shutter which pays out a medal to the medal loan machine between bases are formed in a conveyance rail, respectively, counting of the required number of sheets is carried out by the sensor like an example, and a coin is directly paid out to the expenditure mouth of each opportunity. In the case of a slot machine, output a signal at the time of winning a prize, and a premium medal is made to pay out, and the case of a medal loan machine makes the medal of necessary number of sheets pay out, when receiving an injection of money and a prepaid card.

[0047] In addition, in an example, when the coin which may be fed into a ball rental machine 3 is two kinds such as for example, a 100 yen coin and a 500 yen coin, a coin sorting machine is installed between the recovery conveyer 41 and the reservoir tank 43, and it is good for the reservoir tank 43 to make it only a coin enter 500 yen.

[0048]

[Effect of the Invention] Since the coin or medal for expenditure are not stocked in each of a money-changing machine, or a slot machine and a medal loan machine like the above according to this invention, it is not necessary to prepare a lot of medals as a stocked part.

[0049] Moreover, since what is necessary is to collect only from a conveyance means to all collect the coins and medals which were stocked even if it does not collect from each of a money-changing machine, or a slot machine and a medal loan machine, recovery takes neither a help nor time. Furthermore, since it is necessary to build neither a medal hopper nor a discharge mechanism in each of a money-changing machine, or a slot machine and a medal loan machine, a money-changing machine etc. becomes compact and it can install also in a narrow space easily.

[Translation done.]

* NOTICES *

Japan Patent Office is not responsible for any damages caused by the use of this translation.

1.This document has been translated by computer. So the translation may not reflect the original precisely.
2.**** shows the word which can not be translated.
3.In the drawings, any words are not translated.

DESCRIPTION OF DRAWINGS

[Brief Description of the Drawings]
[Drawing 1] It is the block diagram showing the whole money-changing machine of an example.
[Drawing 2] It is the block diagram showing the bill injection machine in an example.
[Drawing 3] It is the block diagram showing the sending-out hopper in an example.
[Drawing 4] It is the front view showing the conveyance rail and expenditure shutter in an example.
[Drawing 5] It is the cross section which saw the conveyance rail and expenditure shutter in an example from the right.
[Drawing 6] It is the cross section which saw from the right the conveyance rail and expenditure shutter in the state where the expenditure shutter was opened.
[Drawing 7] It is a block diagram showing the composition of the control circuit of an example.
[Drawing 8] It is the flow chart of coin restoration processing of an example.
[Drawing 9] It is the flow chart of exchange processing of an example.
[Drawing 10] It is the flow chart of bill injection machine move processing of an example.
[Drawing 11] It is the flow chart of bill injection processing of an example.
[Drawing 12] It is the flow chart of coin expenditure processing of an example.
[Drawing 13] It is the flow chart of coin recovery processing of an example.
[Description of Notations]
1 [... A game island, 11 / ... Orbit,] ... A pachinko machine, 3 ... A ball rental machine, 5 13 [... Sending-out hopper,] ... A bill injection machine, 15 ... It calls and is a switch and 21. 23 [... Conveyance belt,] ... A conveyance rail, 23a ... A coin exhaust port, 25 27 [... Coin expenditure path,] ... An expenditure shutter, 29 ... A coin expenditure mouth, 31 31a ... the upper part and 33 ... counting -- a sensor and 35 ... a coin existence sensor -- 41 [... Sending-out machine,] ... A recovery conveyer, 43 ... A reservoir tank, 45 47 [... Coin recovery path,] ... A lifter, 51 ... A recovery shutter, 53 61 [... Position detection sensor,] ... A sprocket, 62 ... A chain, 63 64a-64c ... A move position detection plate, 65 ... Slot for bills, 66 [... Piece-of-paper transport device,] ... A bill identification unit, 67 ... A bill receipt box, 68 69 [... Feed disk,] ... A drop, 71 ... A frame, 72 73 [... A guide, 81 / ... Chute combination shutter,] ... A pin, 74 ... Housing, 75 82 [... A solenoid, 85 / ... Spring,] ... A guide frame, 83 ... The supporting point, 84 91 [... The drive circuit for bill injection

machine movement, 107 / ... The drive circuit for conveyance belts, 109 / ... The drive circuit for expenditure shutters, 111 / ... The drive circuit for recovery shutters, C / ... Coin.] ... An expenditure check sensor, 101 ... An electronic control, 105

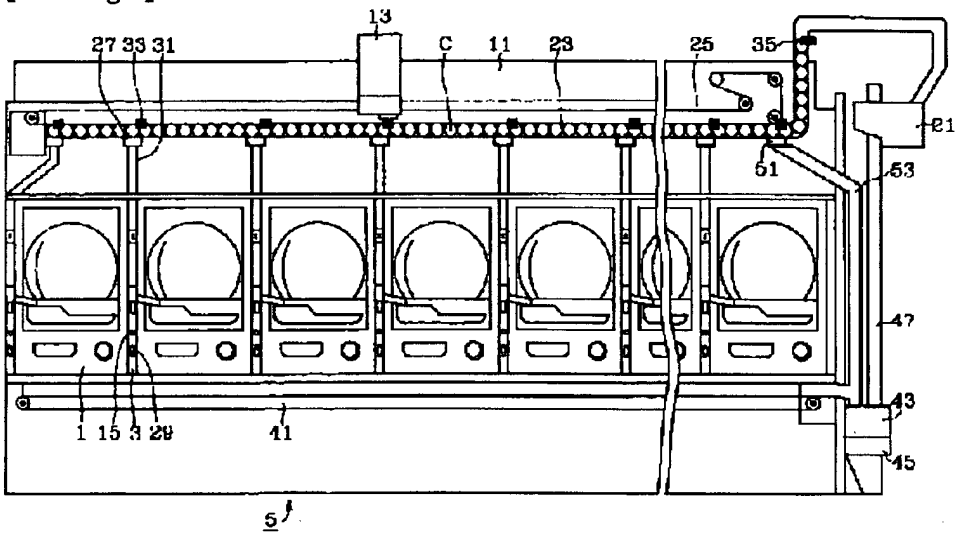
[Translation done.]

* NOTICES *

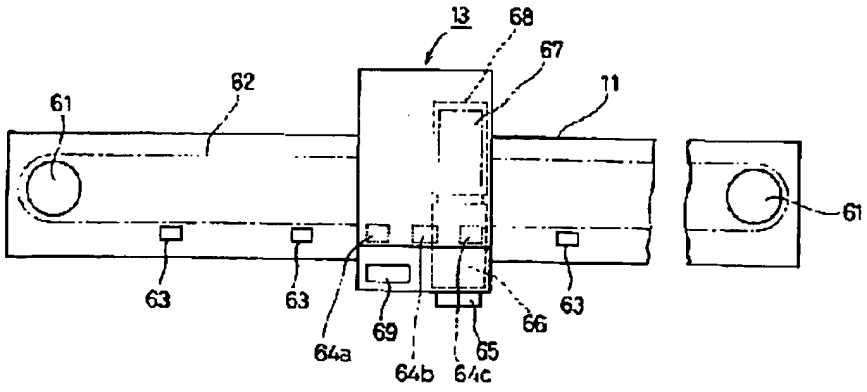
Japan Patent Office is not responsible for any damages caused by the use of this translation.
1.This document has been translated by computer. So the translation may not reflect the original precisely.
2.**** shows the word which can not be translated.
3.In the drawings, any words are not translated.

DRAWINGS

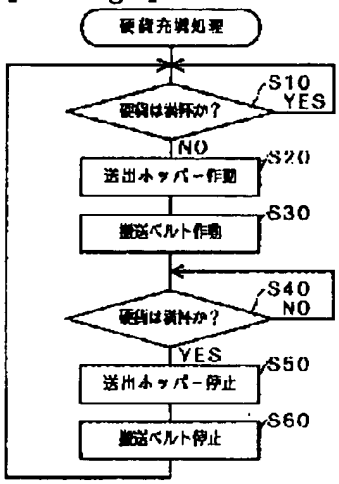
[Drawing 1]



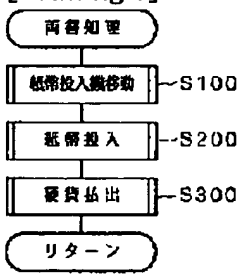
[Drawing 2]



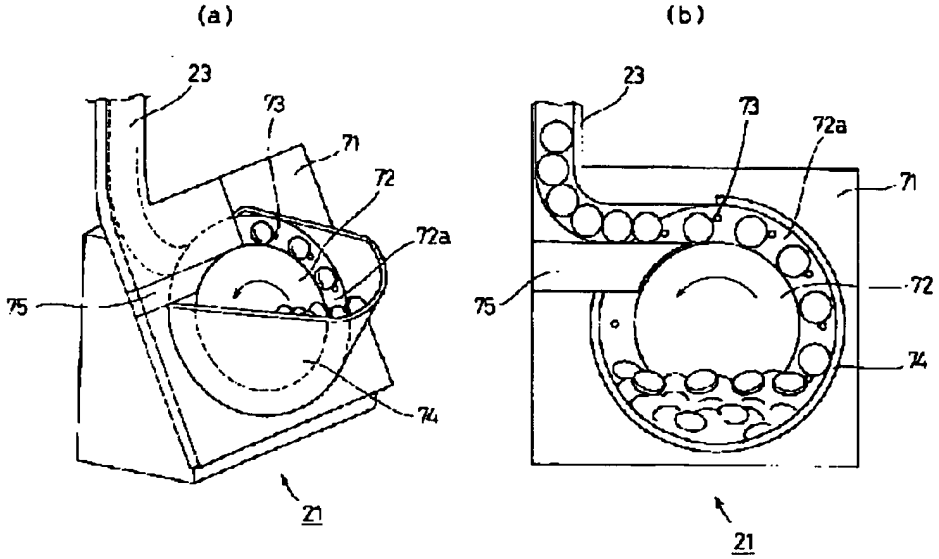
[Drawing 8]



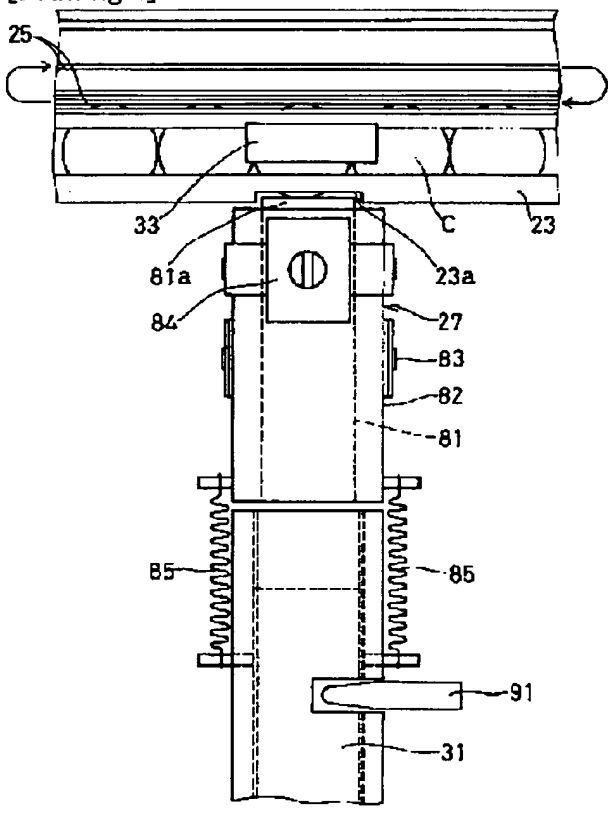
[Drawing 9]



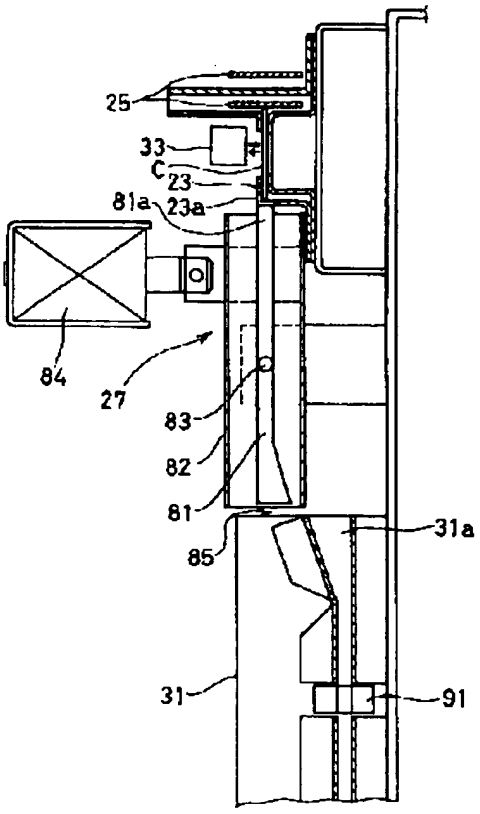
[Drawing 3]



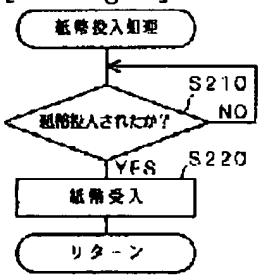
[Drawing 4]



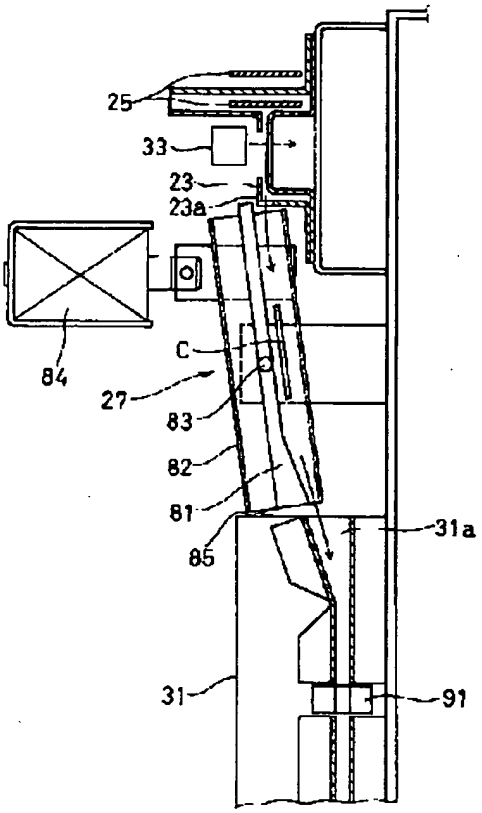
[Drawing 5]



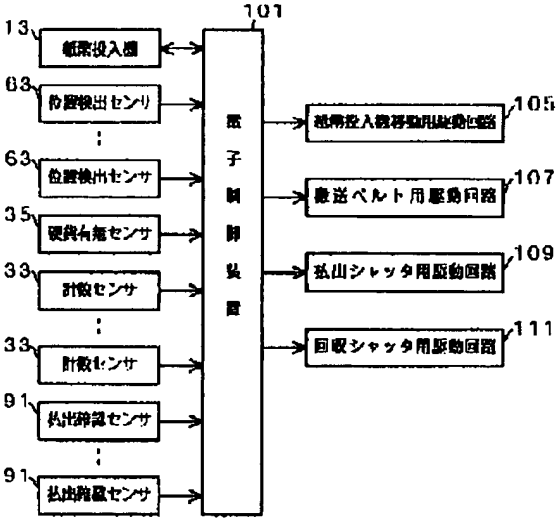
[Drawing 11]



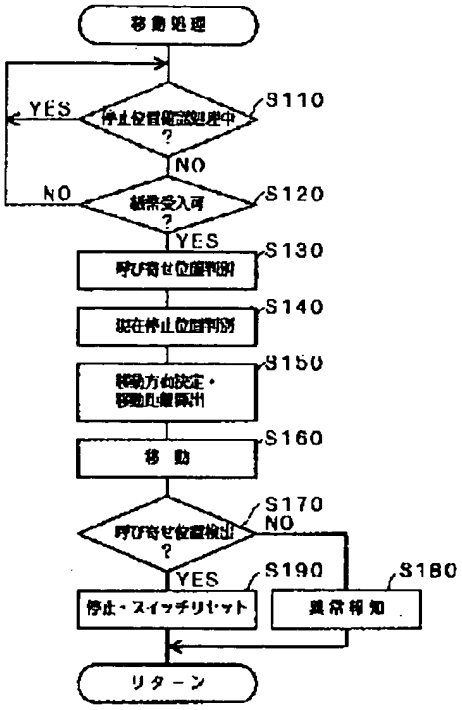
[Drawing 6]



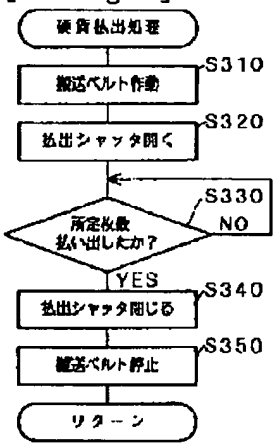
[Drawing 7]



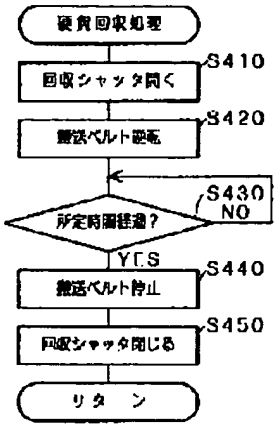
[Drawing 10]



[Drawing 12]



[Drawing 13]



[Translation done.]

(19)日本国特許庁（ＪＰ）　(12)**公開特許公報（Ａ）**　(11)特許出願公開番号

特開平7－185120

(43)公開日　平成７年(1995)７月25日

(51)Int.Cl.[6]	識別記号	庁内整理番号	ＦＩ	技術表示箇所
Ａ６３Ｆ　7/02	３５２　Ｊ			

審査請求　未請求　請求項の数１　ＯＬ　（全 ９ 頁）

(21)出願番号　特願平5－333492

(22)出願日　平成５年(1993)12月27日

(71)出願人　591006508
株式会社メイセイ
愛知県春日井市松河戸町1411番地

(72)発明者　前田　年久
愛知県春日井市松河戸町1374番地　名古屋精工株式会社内

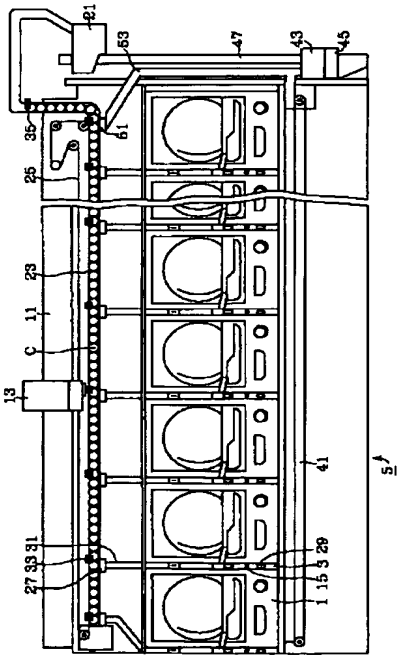
(74)代理人　弁理士　足立　勉

(54)【発明の名称】　コイン払出装置

(57)【要約】

【目的】　コンパクトで、払出用に準備するコインを最小限にすることができ、そのコインの回収も容易にできるコイン払出装置を提供すること。

【構成】　遊技島５に設けられた両替機は、送出ホッパー２１から送り出される５００円硬貨を、搬送ベルト２５によって順に下流へと搬送し、一列に並べて搬送レール２３に収納する。搬送レール２３の各所には、硬貨払出口２９に対応して払出シャッタ２７と硬貨払出通路３１とが配設されている。呼び寄せスイッチ１５を押して紙幣投入機１３を呼び寄せ、紙幣投入機１３に１０００円札を投入すると、その投入位置に応じた払出シャッタ２７が開かれて硬貨が落下する。計数センサ３３により２枚の硬貨が落ちたことを検出すると払出シャッタ２７を閉じる。払出シャッタ２７から落とされた硬貨は、硬貨排出通路３１を介して直接に所定の硬貨払出口２９へ払い出される。



1

【特許請求の範囲】

【請求項１】　遊技島に設けられた両替機，遊技機，メダル貸出機等の備えるコイン払出口へ、硬貨，遊技用メダル等のコイン類を払い出すコイン払出装置であって、コインタンクから前記各払出口の上方までコインを搬送するコイン搬送手段と、

該コイン搬送手段の各所に設けられ、搬送されてきたコインを前記各払出口に直接分配する分配手段と、

各分配手段により分配されるコインの数をそれぞれ計数する計数手段と、

前記各払出口へのコインの払い出しを指示する払出指示手段と、

該払出指示手段の指示の内容に応じた枚数のコインが前記計数手段によって計数されるまで前記分配手段を作動させる分配制御手段とを備えたことを特徴とするコイン払出装置。

【発明の詳細な説明】

【０００１】

【産業上の利用分野】本発明は、例えば両替機の払出口に硬貨を払い出したり、あるいはスロットマシン，メダル貸出機等の払出口にメダルを払い出したりするコイン払出装置に関する。

【０００２】

【従来の技術】従来、例えば実公平４－４４８号公報には、遊技場におけるメダル集配装置が記載されている。このメダル集配装置は、遊技島の一端にメダルタンクを配置し、そのメダルタンクから遊技島の上部へとメダルを搬送し、スロットマシンやメダル貸出機のそれぞれにメダルを供給するように構成されている。

【０００３】このメダル集配装置では、スロットマシンやメダル貸出機のそれぞれに向かって延びるメダル流路や各機のそれぞれが備えるメダルホッパーに払出用メダルがストックされ、各スロットマシンやメダル貸出機のそれぞれが、各々の内蔵する排出機構を作動させて必要な枚数のメダルを払い出していた。

【０００４】

【発明が解決しようとする課題】しかしながら、従来技術によれば、以下に挙げるような問題があった。まず、払出用メダルを各スロットマシンやメダル貸出機のそれぞれにストックする構成になっているため、全部合わせるとかなり大量のメダルをストック分として準備しておかなければならなかった。

【０００５】また、各スロットマシンやメダル貸出機にストックされているメダルを全部回収したい場合には、各機のそれぞれからメダルを回収しなければならないため、回収に人手や時間がかかって面倒であった。特に、上記メダル集配装置を応用して、両替機に両替用硬貨を供給する装置とした場合、両替用の硬貨は、必ず遊技場の開店前に準備して閉店後には回収しなければならないため、準備する硬貨が大量に要る、回収に手間がかかるといったことは、非常に大きな問題であった。

2

【０００６】更に、それぞれにメダルホッパーや排出機構を必ず設けなければならず、各機の内部には相応のスペースが必要であった。このため、メダル貸出機等が全体として大型になり、遊技機間の狭いスペースに設置するには、よりコンパクトなものが望まれていた。

【０００７】そこで本発明は、コンパクトで、払出用に準備するコインを最小限にすることができ、そのコインの回収も容易にできるコイン払出装置を提供することを目的とする。

【０００８】

【課題を解決するための手段】上述の目的を達成するためになされた本発明は、遊技島に設けられた両替機，遊技機，メダル貸出機等の備えるコイン払出口へ、硬貨，遊技用メダル等のコイン類を払い出すコイン払出装置であって、コインタンクから前記各払出口の上方までコインを搬送するコイン搬送手段と、該コイン搬送手段の各所に設けられ、搬送されてきたコインを前記各払出口に直接分配する分配手段と、各分配手段により分配されるコインの数をそれぞれ計数する計数手段と、前記各払出口へのコインの払い出しを指示する払出指示手段と、該払出指示手段の指示の内容に応じた枚数のコインが前記計数手段によって計数されるまで前記分配手段を作動させる分配制御手段とを備えたことを特徴とする。

【０００９】

【作用】本発明のコイン払出装置によれば、各払出口へのコインの払い出しが指示されると、指示の内容に応じた枚数のコインが計数手段によって計数されるまで分配手段が作動して、コインがコイン搬送手段から各払出口に直接払い出される。

【００１０】ここで、例えば、本装置を遊技用メダル払出装置として構成した場合、メダルの払い出し指示は、遊技機での入賞やメダル貸出機への硬貨の投入等に応じて、各遊技機又は各メダル貸出機側から出される。また、本装置を硬貨払出装置として構成した場合、硬貨の払い出し指示は、両替機への紙幣・硬貨の投入やメダル貸出機等が釣銭を払い出す場合等に応じて、各両替機又は各メダル貸出機等から出される。

【００１１】

【実施例】次に、本発明の実施例を図面に基づいて説明する。実施例としてのコイン配給装置は、図１に示すように、パチンコ機１と玉貸機３とが交互に複数配列された遊技島５に設けられる両替機として構成してある。

【００１２】この両替機は、遊技島５の上部に設けた軌道１１に取り付けられた移動式の紙幣投入機１３と、紙幣投入機１３を遊技島５の各所へ呼び寄せるための呼び寄せスイッチ１５とを備え、呼び寄せスイッチ１５が押された位置へ紙幣投入機１３が移動し、両替すべき紙幣を受け入れるようになっている。

【００１３】また、両替用の硬貨を蓄えるため遊技島５

の一端上部に設けられた送出ホッパー２１と、送出ホッパー２１から送り出される硬貨を一列に並べて収納可能な搬送レール２３と、搬送レール２３の硬貨を順次下流へと搬送する搬送ベルト２５と、搬送された硬貨を遊技島各所へ払い出すための払出シャッタ２７と、払出シャッタ２７から払い出された硬貨を、玉貸機３の下部に設けられた硬貨払出口２９へと導く硬貨払出通路３１と、各払出シャッタ２７を通過する硬貨を計数する計数センサ３３と、搬送レール２３の上流部にてレール内の硬貨の有無を検出する硬貨有無センサ３５とを備え、払出シャッタ２７を開閉動作させることにより、搬送レール２３の硬貨を所定の硬貨払出口２９へ払い出すようになっている。なお、硬貨払出口２９は、玉貸機３に不良硬貨が投入された場合の排出口も兼ねている。

【００１４】更に、各玉貸機３に投入された硬貨を回収するため遊技島５の内部に配置された回収コンベヤ４１と、回収された硬貨を貯留するため遊技島５の一端下部に配設された貯留タンク４３と、貯留タンク４３の硬貨を少しずつ送り出す送出機４５と、送り出された硬貨を上記送出ホッパー２１へと持ち上げるリフター４７とを備え、玉貸機３に投入された硬貨を両替用の硬貨として循環させて使っている。

【００１５】更にまた、搬送レール２３の硬貨を貯留タンク４３に回収するための回収シャッタ５１，硬貨回収通路５３も備える。なお、本実施例の両替機は、１０００円札を投入して２枚の５００円硬貨に両替することができる。

【００１６】次に、これら各構成のうち、特徴的な部分について更に詳しく説明する。紙幣投入機１３は、図２に示すように、軌道１１両端のスプロケット６１に張設されたチェーン６２に連結され、チェーン６２を駆動させることによって軌道１１に沿って左右に移動する。軌道１１の内部には、紙幣投入機１３の停止位置に対応させて位置検出センサ６３が配設され、紙幣投入機１３の背面側には移動位置検出プレート６４ａ～６４ｃが固定されている。この移動位置検出プレート６４ａ～６４ｃは、紙幣投入機１３の背面側中央に１箇所と、その左右に１箇所ずつとの３箇所にそれぞれ設けられ、それぞれが紙幣投入機１３が移動した際に位置検出センサ６３の発光部と受光部との間を通過する。これにより、紙幣投入機１３の軌道７上での位置が検出され、呼び寄せスイッチ１５の押された位置に移動・停止させる制御が行われる。

【００１７】また、この紙幣投入機１３は、両替する紙幣を投入するための紙幣挿入口６５と、紙幣挿入口６５から挿入された紙幣の真贋判別、額面判断、贋物紙幣の排出、正規紙幣の送り込み等を実施する紙幣識別装置６６と、着脱自在な紙幣収納ボックス６７と、紙幣識別装置６６から紙幣収納ボックス６７へ正規紙幣を搬送する紙片搬送装置６８と、投入された紙幣の額や、利用者へのメッセージ等を表示する表示器６９とを備え、所定の紙幣（実施例では１０００円札）が投入された場合にのみ当該紙幣を受け入れる。

【００１８】送出ホッパー２１は、図３（ａ），（ｂ）に示すように、傾斜したフレーム７１に回転自在に取り付けられて図示しないモータにて回転させられるフィードディスク７２と、フィードディスク７２の外周近辺に適切なピッチで突設されたピン７３と、フィードディスク７２を取り囲むように設けられ、内部に硬貨が入れられるハウジング７４とを備える。フィードディスク７２の外周近辺は、中央部よりも硬貨１枚の厚さ分だけ低くされた段部７２ａが形成され、ピン７３はこの段部７２ａに配置されている。フィードディスク７２が図示矢印方向に回転駆動されると、ピン７３に硬貨が引っかけられ、ハウジング７４の内面と段部７２ａに案内されて１枚ずつ搬送され、ガイド７５に沿って搬送レール２３へと押し出されてゆく。

【００１９】搬送レール２３は、図１に示した通り、送出ホッパー２１から送り出された硬貨Ｃを内部に１枚ずつ並べて収納しており、ここに収納された硬貨は、図４，図５に示すように、上端部分が搬送ベルト２５に当接している。この搬送ベルト２５は、図４に矢印で示すように循環駆動され、硬貨Ｃを搬送レール２３の上で転がしながら下流の方向（図４の左方向）へ向かって搬送する。また、図１に示した通り、搬送レール２３の上流部には硬貨有無センサ３５が配置されている。この硬貨有無センサ３５は、硬貨Ｃによって投光部と受光部との間が遮られるとオンになるフォトセンサで、このセンサがオンとなっている場合に、搬送レール２３内に硬貨Ｃが満杯になっていると判断する。上記送出ホッパー２１は、この硬貨有無センサ３５がオフになると作動させられ、搬送レール２３へ硬貨を送出する。

【００２０】この搬送レール２３の各所には、硬貨を排出するための払出シャッタ２７及び硬貨払出通路３１が設けられている。払出シャッタ２７は、図４，図５に示すとおり、搬送レール２３に形成された硬貨排出口２３ａを上端部８１ａで閉鎖するシュート兼用シャッタ８１と、シュート兼用シャッタ８１を囲んで設けられたガイド枠８２と、支点８３を軸にして上記シュート兼用シャッタ８１及びガイド枠８２を回動させるソレノイド８４とを備える。ソレノイド８４に通電すると、図６に示すように、シュート兼用シャッタ８１が回動して搬送レール２３の硬貨排出口２３ａから硬貨Ｃが落下し、通電を止めるとバネ８５によってシュート兼用シャッタ８１が図５の回動位置に戻されて硬貨排出口２３ａを閉じる。

【００２１】この開閉動作によって硬貨排出口２３ａから落ちる硬貨Ｃの枚数は、硬貨排出口２３ａのやや上方にある計数センサ３３によって数えられる。計数センサ３３は反射型フォトセンサで、硬貨Ｃが搬送レール２３上にある場合（図５参照）、硬貨Ｃからの反射光を受け

てオンとなり、硬貨Ｃが搬送レール２３上にない場合（図６参照）、硬貨Ｃによる反射がないためオフとなる。したがって、オフとなったタイミングでカウントを取ることによって払出枚数がわかる。

【００２２】硬貨排出口２３ａから落とされた硬貨Ｃは、シュート兼用シャッタ８１に導かれて硬貨払出通路３１に入る。硬貨払出通路３１は、硬貨Ｃを受け取りやすいように上部３１ａが広口にされ、受け取った硬貨Ｃを図１に示した各玉貸機３の下部にある硬貨払出口２９へと導くように配設されている。また、この硬貨払出通路３１の途中には、図４～図６に示すとおり、払出確認センサ９１が配置されている。払出確認センサ９１は、落下する硬貨Ｃが投光部と受光部との間を通過するように配置されたフォトセンサで、硬貨Ｃが予定通りの枚数通過したか否かを確認するために設けられている。

【００２３】なお、回収シャッタ５１，硬貨回収通路５３も、硬貨の搬送先が貯留タンク４３となることを除き、払出シャッタ２７，硬貨払出通路３１とほぼ同様に構成されている。以上の構成において、図１に示した回収コンベヤ４１は電源投入によって連続作動して、玉貸機３に投入された硬貨を貯留タンク４３へと回収している。また、リフター４７は、送出ホッパー２１内の硬貨が所定より少なくなると作動して、ある程度の量の硬貨が常に送出ホッパー２１内に蓄えられているようにしている。更に、紙幣投入機１３，搬送ベルト２５，各払出シャッタ２７，回収シャッタ５１は、以下に説明する電子制御装置１０１によって動作を制御される。

【００２４】電子制御装置１０１には、図７に示すとおり、紙幣投入機１３を軌道１１に沿って移動させるためのモータ等を駆動する紙幣投入機移動用駆動回路１０５と、搬送ベルト２５を駆動制御する搬送ベルト用駆動回路１０７と、払出シャッタ２７を開閉動作させる払出シャッタ用駆動回路１０９と、回収シャッタ５１を開閉動作させる回収シャッタ用駆動回路１１１とが接続され、各回路に駆動信号を出力する。また、紙幣投入機１３が接続され、正規紙幣の受取，動作不良発生を示す信号の入力、硬貨の払出完了を示す信号の出力等、相互に信号の入出力を行う。更に、紙幣投入機１３での紙幣受取完了を検出する紙幣センサ１２１と、紙幣投入機１３の移動位置を検出する各位置検出センサ６３と、搬送レール２３の収納硬貨不足を検出する硬貨有無センサ３５と、払出枚数をカウントする各計数センサ３３と、正常に払出が行われたか否かを確認する払出確認センサ９１等が接続され、これらのセンサの検出信号がそれぞれ入力される。なお、この電子制御装置１０１は、周知のＣＰＵ，ＲＯＭ，ＲＡＭ等を中心に構成された論理演算回路である。

【００２５】次に、この電子制御装置１０１によって制御された両替機の動作について説明する。この両替機は、図８に示す硬貨充填処理によって、常に搬送レール２３内に硬貨が満杯になっているようにしている。

【００２６】まず、電子制御装置１０１は、図８に示すように、硬貨有無センサ３５の検出信号に基づき、搬送レール２３に硬貨が満杯になっているか否かをチェックする（Ｓ１０）。両替機の始動時には硬貨が満たされておらず、硬貨有無センサ３５がオフとなるので（Ｓ１０：ＮＯ）、電子制御装置１０１は送出ホッパー２１を作動させ（Ｓ２０）、搬送ベルト２５も作動させる（Ｓ３０）。この結果、硬貨が１枚ずつ搬送レール２３へと送出され、搬送レール２３には硬貨がぎっしりと並べられてゆく。次に、再び、硬貨有無センサ３５の検出信号に基づき、搬送レール２３に硬貨が満杯になっているか否かをチェックする（Ｓ４０）。硬貨が順次送出されて、硬貨有無センサ３５の位置まで詰まると、硬貨有無センサ３５がオンとなるので（Ｓ４０：ＹＥＳ）、送出ホッパー２１を停止させ（Ｓ５０）、搬送ベルト２５も停止させる（Ｓ６０）。この結果、搬送レール２３内には、送出ホッパー２１が停止するまでに送出された硬貨が詰まる。以降は、Ｓ１０へと戻り、搬送レール２３内の硬貨が払い出されてある程度以上減るたびに、Ｓ２０以降の処理が実行される。

【００２７】以上の処理とは別に、呼び寄せスイッチ１５が押されるたびに、図９の両替処理が実行される。両替処理では、図９に示すように、まず、呼び寄せスイッチ１５が押された位置へ紙幣投入機１３を移動させる紙幣投入機移動処理が行われる（Ｓ１００）。このＳ１００の移動処理の内容は、詳しくは図１０に示す処理になる。

【００２８】まず、紙幣投入機１３を、すでに、いずれかの停止位置で停止させるために、停止位置の確認処理を実行中であるか否かを調べ（Ｓ１１０）、紙幣投入機１３が紙幣の受け入れをできるか否かについて判断する（Ｓ１２０）。停止位置の確認処理中であれば当該処理が終了するまで待機し（Ｓ１１０：ＹＥＳ）、又、紙幣投入機１３の外部カバーが開いている等の原因により、紙幣の受け入れができない状態であれば、紙幣受け入れができる状態になるまで待機する（Ｓ１２０：ＮＯ）。

【００２９】Ｓ１１０，１２０で確認処理が終了し、かつ紙幣受け入れ状態にあると判断した場合は（Ｓ１１０：ＮＯ，Ｓ１２０：ＹＥＳ）、呼び寄せスイッチ１５の押された呼び寄せ位置を判別し（Ｓ１３０）、次いで現在停止している現在停止位置の判別を行う（Ｓ１４０）。そして、これらの判別結果に基づいて、紙幣投入機１３の移動方向を決定しその移動距離を算出する（Ｓ１５０）。

【００３０】次に、紙幣投入機移動用駆動回路１０５に上記移動方向・距離に応じた駆動信号を出力して紙幣投入機１３を移動させ（Ｓ１６０）、紙幣投入機１３が呼び寄せ位置に到達したか否かを、呼び寄せ位置に対応する位置検出センサ６３の検出信号から判断する（Ｓ１７

０）。ここで、位置検出センサ６３から検出信号が無ければ、Ｓ１５０で算出した距離だけ紙幣投入機１３を移動させたにもかかわらずその呼び寄せ位置に到達していないので、当該位置検出センサ６３の異常としてその旨を表示器６９に表示して（Ｓ１８０）、本ルーチンを一旦終了する。

【００３１】一方、押された呼び寄せスイッチ１５に対応する位置検出センサ６３から検出信号を入力すれば、紙幣投入機１３が呼び寄せ位置に到達したとして、当該呼び寄せスイッチ１５をリセットすると共に上記駆動信号の出力を停止して（Ｓ１９０）、紙幣投入機１３を呼び寄せ位置に停止させる。ここで、例えば、紙幣投入機１３が右に移動する場合には、図２において右の移動位置検出プレート６４ｃが位置検出センサ６３の発光部と受光部との間を遮ったときに、駆動回路１０５への駆動信号を停止し、さらに、中央の移動位置検出プレート６４ｂが位置検出センサ６３の発光部と受光部との間を遮ったときに、駆動用モータが備えるブレーキを作動させる。このように紙幣投入機１３を停止させることによって、停止位置を安定して一定の位置にすることができ、かつ停止時に紙幣投入機１３に加わるショックを緩和することもできる。

【００３２】なお、ある呼び寄せスイッチ１５が押されて、その位置に向けて紙幣投入機１３が移動中に、目標位置までの移動経路上にある他の呼び寄せスイッチ１５が押されたときには、その位置を紙幣投入機１３が通過していなければ、まず後から押された呼び寄せスイッチ１５に対応する位置に紙幣投入機１３を停止させ、両替動作を実施してから、あらためて先に呼び寄せスイッチ１５が押された位置に移動させるよう構成されている。

【００３３】さて、以上のようにして図９におけるＳ１００の移動処理を終えると、次に紙幣投入機１３に投入される紙幣を受け取る紙幣投入処理が実行される（Ｓ２００）。このＳ２００の紙幣投入処理は、詳しくは図１１に示す処理になる。まず、紙幣を受け入れるために待機して（Ｓ２１０）、紙幣が投入されたら（Ｓ２１０：ＹＥＳ）、紙幣受取部用駆動回路１０３に駆動信号を出力して、紙幣投入機１３に挿入された紙幣の真贋判別，額面判断，贋物紙幣の排出，正規紙幣の送り込み，正規紙幣の搬送及び持ち上げ・収納等を行う（Ｓ２２０）。なお、これらの処理は周知の両替機における紙幣の受け入れ処理と同様で、実施例では、１０００円札のみを判別して受け入れる。

【００３４】こうして図９におけるＳ２００の紙幣投入処理を終えると、次に、受け入れた紙幣の額面に応じた枚数の硬貨を払い出す硬貨払出処理を行う（Ｓ３００）。このＳ３００の硬貨払出処理は、詳しくは図１２に示すようになる。まず、搬送ベルト用駆動回路１０７に駆動信号を出力して、搬送ベルト２５を作動させる（Ｓ３１０）。そして、払出シャッタ用駆動回路１０９に駆動信号を出力して、呼び寄せスイッチ１５の押された位置に応じた払出シャッタ２７を開く（Ｓ３２０）。この結果、その払出シャッタ２７の真上にあった硬貨が落下し、その位置へは隣の硬貨が搬送ベルト２５によって順に送られる。ここでいう隣の硬貨とは、図４において、右隣の硬貨である。実施例では、左隣の硬貨は搬送ベルト２５によって左方向へ付勢されているので、右向きには転がってこない。即ち、実施例において、搬送ベルト２５は、硬貨を下流側へと搬送する手段であると同時に、硬貨が逆戻りしないように付勢する逆戻り防止手段としても作用している。

【００３５】次に、硬貨が所定枚数払い出されるのを計数センサ３３によってカウントする（Ｓ３３０）。実施例では、５００円硬貨を２枚だけ払い出すので、１枚目の硬貨が落下して計数センサ３３がオフとなり、次の硬貨が搬送されてきて計数センサ３３がオンとなり、更にその硬貨も落下して計数センサ３３がオフとなったときに、２枚の硬貨が払い出されたと判定できる。なお、このとき同時に、払出確認センサ９１でも払出枚数がカウントされ、計数センサ３３のカウント数と異なる場合には硬貨が途中で引っかかった可能性があるため、その旨のエラーコードを表示器６９に表示して、紙幣の受け入れを中止する。

【００３６】こうして所定枚数の硬貨を払い出したら、払出シャッタ用駆動回路１０９への駆動信号を停止して、開いていた払出シャッタ２７を閉める（Ｓ３４０）。そして、搬送ベルト２５も停止させる（Ｓ３５０）。以上の処理によって、呼び寄せスイッチ１５が押された位置での両替が終わる。

【００３７】さて次に、搬送レール２３に収納された両替用硬貨の回収について説明する。硬貨の回収は、図示しない回収スイッチを押すと実行される制御で、図１３のフローチャートに示す硬貨回収処理によって行われる。まず、この処理が開始されると、回収シャッタ用駆動回路１１１に駆動信号が出力され、回収シャッタ５１が開かれる（Ｓ４１０）。そして、搬送ベルト用駆動回路１０７に逆転の駆動信号を出力して、搬送ベルト２５を通常とは逆回転するように作動させる（Ｓ４２０）。この結果、搬送レール２３に収納された硬貨は、順に回収シャッタ５１へと搬送され、ここから硬貨回収通路５３を介して貯留タンク４３へ落とされる。そして、回収に必要な所定時間が経過するのを待って（Ｓ４３０）、搬送ベルト用駆動回路１０７への駆動信号が停止され、搬送ベルト２５が止められる（Ｓ４４０）。そして、回収シャッタ用駆動回路１１１への駆動信号も停止され、回収シャッタ５１が閉じられる（Ｓ４５０）。

【００３８】以上説明したように、本実施例の両替機によれば、硬貨払出口２９へ搬送レール２３から直接に硬貨を落下させるようにしたので、硬貨払出口２９に対応してそれぞれに両替用硬貨をストックしなくても良い。

したがって、それぞれに両替用硬貨をストックする場合に比べて、全体のストック量は少なくてもよくなる。

【００３９】また、硬貨の回収に当たっては、搬送レール２３の一ヶ所からまとめて回収するだけでよいので、払出口毎に硬貨をストックしてある場合に比べて格段に回収が楽になる。特に実施例では、簡単に一つの貯留タンク４３へ回収できる構成をも備えたので、硬貨の回収に人手や時間がより一層かからない。

【００４０】更に、パチンコ機１同士の狭いスペースに払出硬貨用のホッパーや排出機構を設けなくてもよいので、狭くても簡単に両替機を設置できる。特に、実施例では、紙幣投入機１３を移動式にすると共に、硬貨払出口２９を玉貸機３の不良硬貨排出口と兼用しているので、玉貸機３と本両替機の硬貨払出部分とがきわめてコンパクトに台間に収まっている。したがって、遊技者はまったく席を立たずにパチンコ機を使うことができる。

【００４１】以上本発明の実施例を説明したが、本発明はこれに限定されず、本発明の要旨を逸脱しない範囲内の種々なる態様を採用することができる。例えば、実施例では、払出確認センサ９１によって硬貨の払出が確認できない場合に、エラーを表示して両替を中止するように構成したが、１度あるいは数度にわたって払出シャッタ２７を再作動させて、払い出しを促してみるようにしてもよい。但し、誤って多くの硬貨を排出し過ぎないためには、実施例のようにしておく方がよい。

【００４２】また、実施例では、適切なタイミングで払出シャッタ２９を閉じることによって、所定枚数の硬貨が払い出されるように構成したが、ステッピングモータを使って所定枚数の硬貨だけが搬送される程度に搬送ベルト２５を作動させる様に構成すれば、払出シャッタ２７を特定のタイミングで閉じるように制御しなくてもよい。

【００４３】加えて、実施例では、硬貨払い出しの際に、搬送ベルト２５を駆動することによって下流側の硬貨が逆戻りしないようにしてあったが、この逆戻り防止手段としては、単に搬送レール２３を下流側へむかって下がるように傾斜させて配置してもよい。

【００４４】また、実施例では、両替用硬貨を蓄えるために遊技島の一端上部に送出ホッパー２１を設けたが、このホッパーは、例えば遊技場の事務所の中に設置しておいて、各遊技島に硬貨を送り出すようにしても良い。更に、実施例では、硬貨を立てて一列に並べると共に転がしながら搬送する搬送レール２３を示したが、遊技島５の上部における搬送方法は何らこれに限らない。例えば、硬貨を横に寝かせて滑らせながらレール上に押し出したり、ベルトコンベヤに載せて順に搬送するなど、周知の様々な方法を採用できる。

【００４５】更にまた、実施例では、１０００円札を５００円硬貨２枚に両替する両替機を示したが、５０００円，１００００円の受け入れを可能にしたり、１００円硬貨に両替する両替機にしてもよい。また、紙幣投入機を移動式にしなくても、パチンコ機１の間に固定される周知の紙幣投入機であってもよい。また、実施例では、玉貸機３の下部に硬貨払出口２９を設けたが、硬貨払出口２９はパチンコ機１に設けてもよく、それ以外にも遊技島５に専用に設けた受け皿などに払い出すようにしてもよい。

【００４６】更に加えて、実施例のような両替機に限らず、スロットマシン等のメダルゲーム機で使われる遊技用メダルの払出装置として構成してもよい。この場合は、スロットマシンにメダルを払い出す払出シャッタと、台間のメダル貸出機にメダルを払い出す払出シャッタとをそれぞれ搬送レールに設け、実施例同様に必要枚数をセンサで計数して直接各機の払出口へ硬貨を払い出すようにする。スロットマシンの場合は、入賞時に信号を出力して景品メダルを払い出させ、メダル貸出機の場合は、貨幣やプリペイドカードの投入を受け付けたら所要枚数のメダルを払い出させる。

【００４７】なお、実施例において、玉貸機３に投入され得る硬貨が、例えば、１００円硬貨と５００円硬貨との２種類であるような場合には、回収コンベヤ４１と貯留タンク４３との間に硬貨選別機を設置して、貯留タンク４３には５００円硬貨だけが入るようにしておくとよい。

【００４８】

【発明の効果】以上の如く本発明によれば、払出用の硬貨やメダルを、両替機やスロットマシン，メダル貸出機のそれぞれにストックしないので、大量のメダルをストック分として準備しなくてもよい。

【００４９】また、ストックした硬貨やメダルを全部回収したい場合には、両替機やスロットマシン，メダル貸出機のそれぞれから回収しなくても、搬送手段からだけ回収すればよいので、回収に人手や時間がかからない。更に、両替機やスロットマシン，メダル貸出機のそれぞれにメダルホッパーや排出機構を内蔵しなくてもよいので、両替機等がコンパクトになって狭いスペースにも容易に設置できる。

【図面の簡単な説明】

【図１】　実施例の両替機の全体を示す構成図である。

【図２】　実施例における紙幣投入機を示す構成図である。

【図３】　実施例における送出ホッパーを示す構成図である。

【図４】　実施例における搬送レール及び払出シャッタを示す正面図である。

【図５】　実施例における搬送レール及び払出シャッタを右からみた断面図である。

【図６】　払出シャッタが開いた状態における搬送レール及び払出シャッタを右からみた断面図である。

【図７】　実施例の制御回路の構成を表すブロック図で

11

ある。

【図８】　実施例の硬貨充填処理のフローチャートである。

【図９】　実施例の両替処理のフローチャートである。

【図１０】　実施例の紙幣投入機移動処理のフローチャートである。

【図１１】　実施例の紙幣投入処理のフローチャートである。

【図１２】　実施例の硬貨払出処理のフローチャートである。

【図１３】　実施例の硬貨回収処理のフローチャートである。

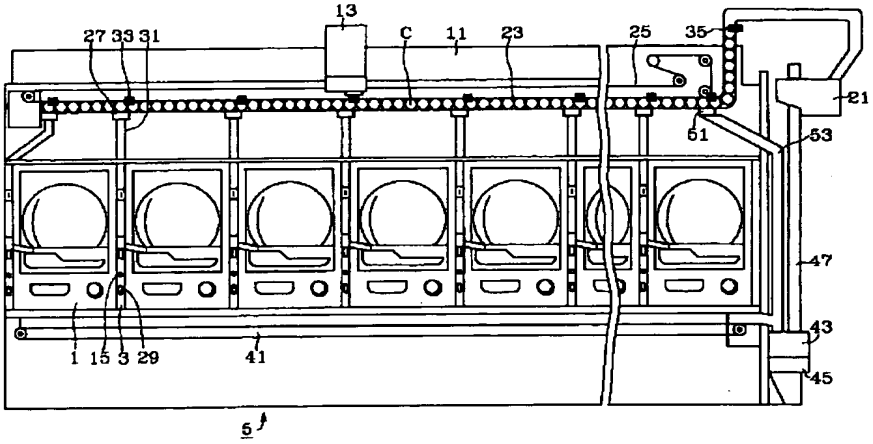
【符号の説明】

１・・・パチンコ機、３・・・玉貸機、５・・・遊技島、１１・・・軌道、１３・・・紙幣投入機、１５・・・呼び寄せスイッチ、２１・・・送出ホッパー、２３・・・搬送レール、２３ａ・・・硬貨排出口、２５・・・搬送ベルト、２７・・・払出シャッタ、２９・・・硬貨＊

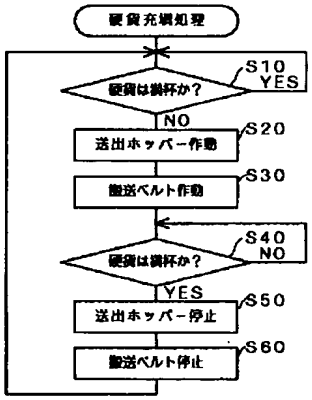
12

＊払出口、３１・・・硬貨払出通路、３１ａ・・・上部、３３・・・計数センサ、３５・・・硬貨有無センサ、４１・・・回収コンベヤ、４３・・・貯留タンク、４５・・・送出機、４７・・・リフター、５１・・・回収シャッタ、５３・・・硬貨回収通路、６１・・・スプロケット、６２・・・チェーン、６３・・・位置検出センサ、６４ａ～６４ｃ・・・移動位置検出プレート、６５・・・紙幣挿入口、６６・・・紙幣識別装置、６７・・・紙幣収納ボックス、６８・・・紙片搬送装置、６９・・・表示器、７１・・・フレーム、７２・・・フィードディスク、７３・・・ピン、７４・・・ハウジング、７５・・・ガイド、８１・・・シュート兼用シャッタ、８２・・・ガイド枠、８３・・・支点、８４・・・ソレノイド、８５・・・バネ、９１・・・払出確認センサ、１０１・・・電子制御装置、１０５・・・紙幣投入機移動用駆動回路、１０７・・・搬送ベルト用駆動回路、１０９・・・払出シャッタ用駆動回路、１１１・・・回収シャッタ用駆動回路、Ｃ・・・硬貨。

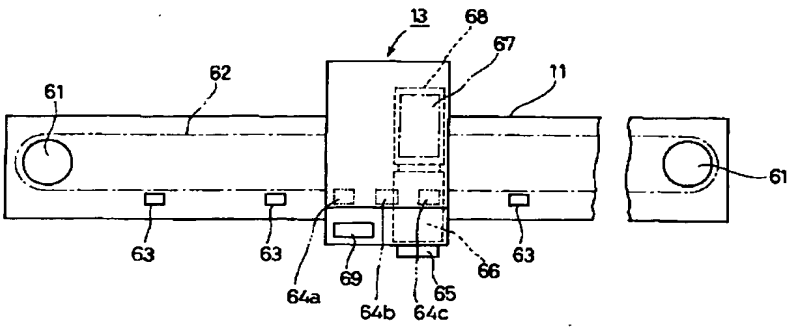
【図１】



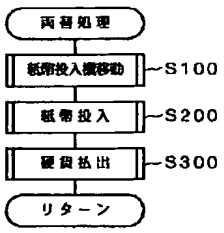
【図８】



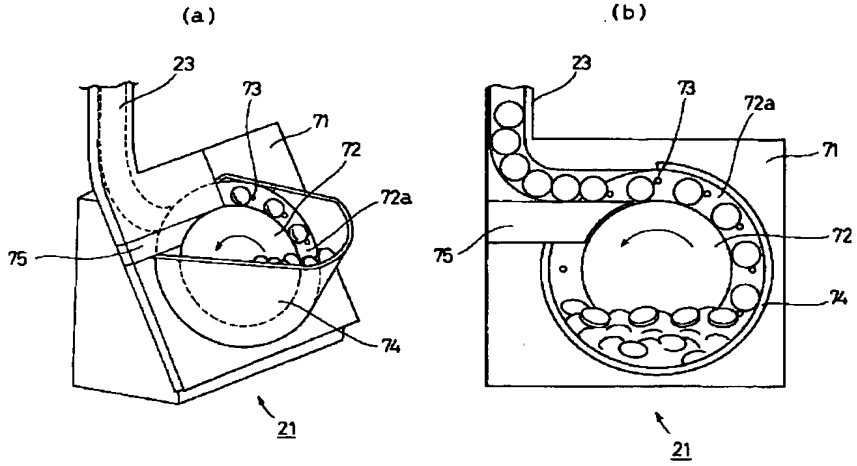
【図２】



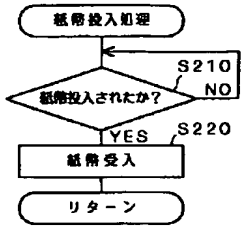
【図９】



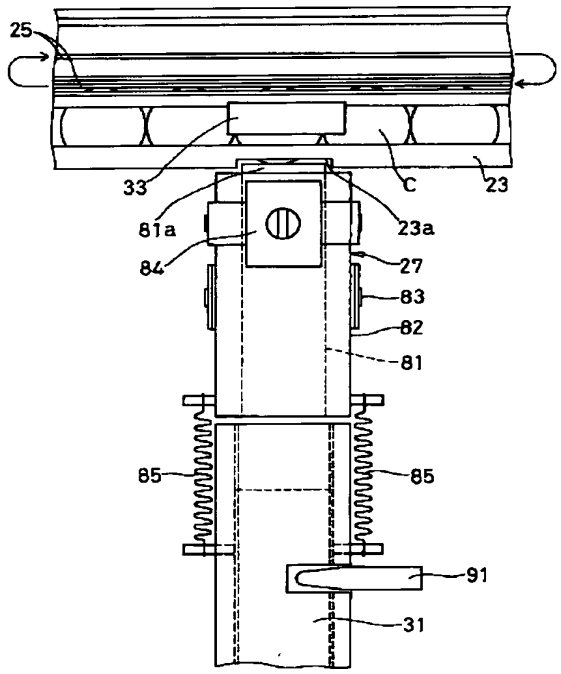
【図３】


(a)
(b)
23
73
71
72
72a
75
74
21

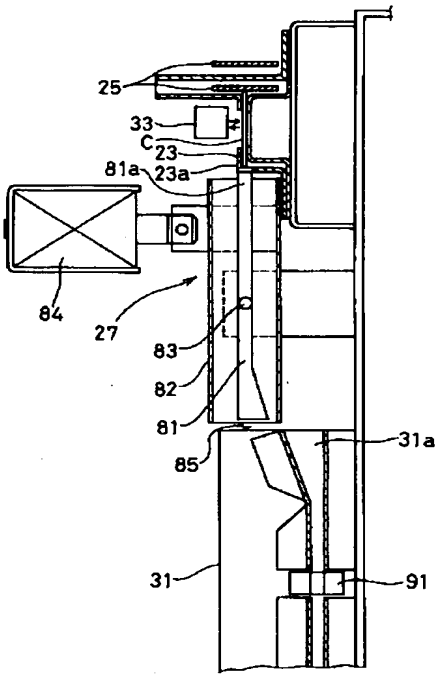
【図１１】


紙幣投入処理
S210
紙幣投入されたか?
NO
YES
S220
紙幣受入
リターン

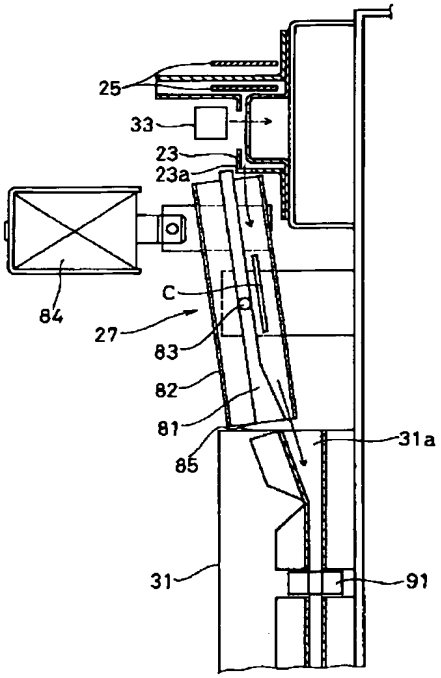
【図４】


25
33
C
23
81a
23a
84
27
83
82
81
85
91
31

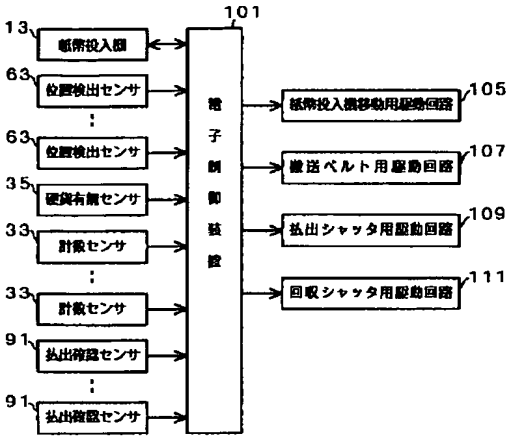
【図５】


25
33
C
23
81a
23a
84
27
83
82
81
85
31a
31
91

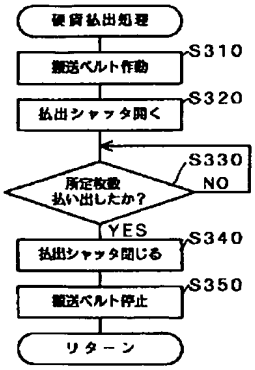
【図６】



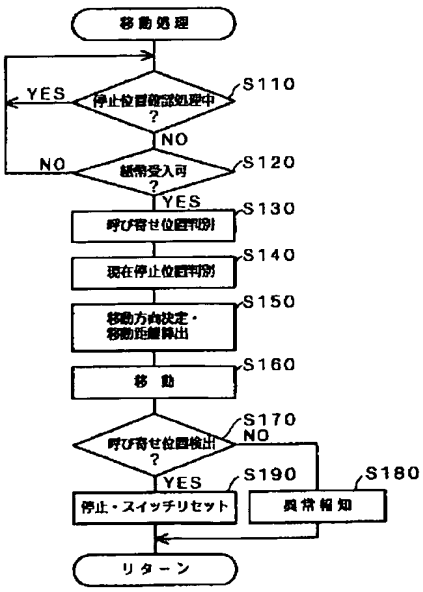
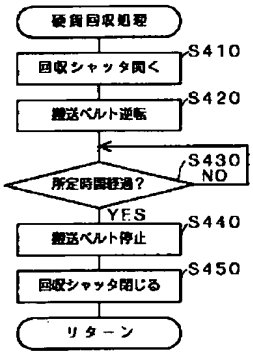
【図７】



【図１２】



【図１０】



【図１３】